

REMARKS

In the Office Action mailed March 31, 2004 the Examiner noted that claims 1-18 were pending, and rejected claims 1-18. Claims 1, 2, 9, 10 and 14-18 have been amended, claims 6-8 and 11-13 have been canceled, new claim 19 has been added and, thus, in view of the forgoing claims 1-5, 9, 10 and 14-19 remain pending for reconsideration which is requested. No new matter has been added. The Examiner's rejections are traversed below.

On page 3 of the Office Action, the Examiner rejected claim 18 under 35 U.S.C. § 102 as anticipated by Ishitani (5,550,918). It appears that the Examiner did not provide a copy of Ishitani with the Action nor did the Examiner cite Ishitani in a citation listing such as on a PTO-1449. The Examiner is requested to cite Ishitani on a PTO-1449.

Pages 4 and 7 of the Office Action reject claims 1-17 under 35 U.S.C. § 103 over various combinations of Spitz, Takaoka, Yokoyama and Muir.

The rejections noted above are discussed below.

Ishitani is directed to a system that determines a line orientation and then determines a skew the oriented line based on the "direction along which the text characters are aligned continuously"

Spitz is directed to a system that determines whether the lines are horizontal or vertical and then determines whether they are skewed or warped. Spitz does not determine the reading orientation of a text character in addition to determining the line orientation. Spitz is directed at automatically determining text line parameters in a situation where the text is skewed from a proper orientation.

Takaoka is directed at a system in which a similarity score for each of the possible orientations of a document is determined and the document is oriented based on that score.

Yokoyama is directed to a system in which image patterns are stored in a dot matrix form and can be output in various forms such as upside down.

Muir is concerned with determining the language of text based on the styles of the text using point features in lines and points extracted from a document.

The present invention is directed to a system in which the line orientation of a document is determined. From this line orientation a character from a line of the text is extracted. This extracted character is used to determine the reading orientation of the document. From the line orientation and the reading orientation the actual orientation of the document is determined and

corrected into the correct or proper reading orientation. In particular, the present invention determine the reading orientation even when the image is mirror image flipped. For example, the line orientation may be horizontal with some skew and some rotation within the text plane (which we will assume for arguments sake that the prior art will detect and correct). But the text characters may also be mirror image flipped. That is, the correct reading orientation is for the document to be mirror image flipped or rotated outside the plane of the text. In the present invention an extracted character may have an image of a mirror flipped "R", such as "Я". The present invention will detect this using "likelihood" recognition results and correct for this improper mirror flipped orientation. For example, the text might read "ИУЯ" and the invention will detect this mirror flipped orientation, along with skew, in-plane rotation etc. and correct the orientation so that the text reads "RUN". The prior art will not detect and correct such mirror flipped or out of the text plane orientations (see claims 1, 9, 14, 15, 16, 17 and 18).

The prior art references alone or in combination do not teach or suggest orientation correction including mirror image flipping. Spitz and Ishitani, as noted above correct for skew and say nothing about mirror flipping. Takaoka and Yokoyama describe general technologies and do not provide a level of detail such as is needed to describe mirror flipping. Muir is not directed at orientation determination. Those of skill in the art could not have arrived at the present invention from these references. The Examiner appears to be using hindsight in arriving at the present invention from these references.

In addition, as emphasized in claims 1, 9, 14, 15, 16, 17 and 18, the present invention determines the proper orientation from a plurality of different conversion method extracted images of the text ("among the images to which said image converting unit converts the extracted image with different conversion methods". The prior art of Ishitani, Spitz, Takaoka, Yokoyama and Muir does not teach or suggest this feature.

It is submitted that the invention of independent claims distinguishes over the prior art and withdrawal of the rejection is requested.

New claim 19 emphasizes that the present invention detects and corrects for improper text orientations where the text needs to be rotated out side the plane of the text to correct for the improper orientation, such as is required for mirror image flipping. Nothing in the prior art teaches or suggests such. It is submitted that the new claim distinguishes over the prior art.

It is submitted that that the claims are not taught, disclosed or suggested by the prior art. The claims are therefore in a condition suitable for allowance. An early Notice of Allowance is requested.

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If any further fees, other than and except for the issue fee, are necessary with respect to this paper, the U.S.P.T.O. is requested to obtain the same from deposit account number 19-3935.

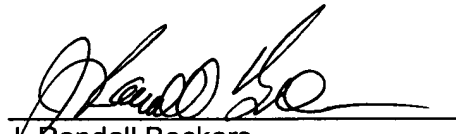
Respectfully submitted,

STAAS & HALSEY LLP

Date: _____

8/2/4

By: _____



J. Randall Beckers
Registration No. 30,358

1201 New York Ave, N.W., Suite 700
Washington, D.C. 20005
Telephone: (202) 434-1500
Facsimile: (202) 434-1501